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EMERGING MARKETS AT THE CROSSROADS

Structural changes are required to put them on a path to steady, long-term growth. It won't be easy.

P10

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Moving up the value chain: The evolution of Vietnam's manufacturing sector

Moving up the global manufacturing value chain is a development goal broadly shared among emerging-market countries. Achieving this objective, however, can be elusive. Vietnam is an example of a country that is successfully making this transformation, in the process emerging as one of Asia's most trade-reliant economies.

By Simona Mocuta

Vietnam has experienced dramatic change since the turn of the century. The country's exports began building critical mass following the signing of a bilateral trade agreement with the United States in 2001. The pace of export growth quickened in 2007 when Vietnam was admitted as a member of the World Trade Organization (WTO). Between 2000 and 2013, the value of merchandise exports from Vietnam rose nearly tenfold to $132 billion, while the share of merchandise exports as a percentage of GDP jumped from 46% to 77%.

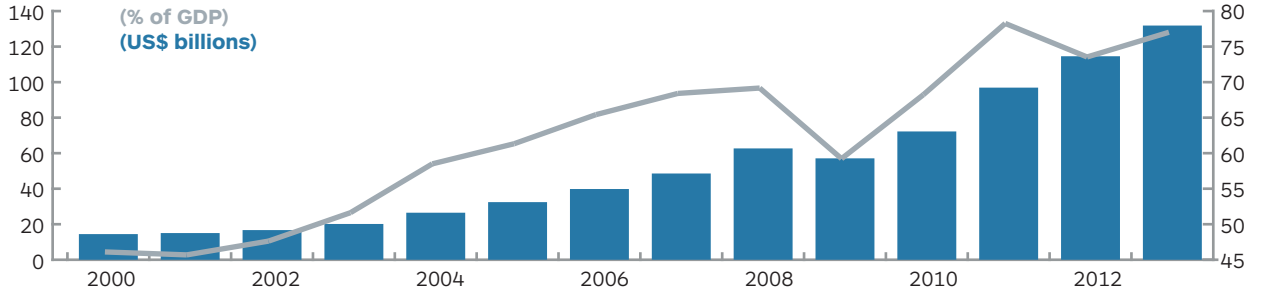
Based on this measure, Vietnam now exceeds Taiwan, Thailand, and Malaysia in terms of economic openness. Indeed, within Asia, only the major trading hubs—Singapore and Hong Kong—have higher shares of goods exports to GDP. It is worth noting, however, that trade for these two countries consists mainly of re-exports, which is not the case for Vietnam. In light of these figures, the importance of exports as a driver of economic change in Vietnam cannot be overstated (see chart below).

Changes in the makeup of Vietnam's export mix go far beyond its rate of expansion, however. In the mid-1990s, the country's exports were heavily dominated by commodities such as fish, rice, and petroleum. In 1995, items such as these, classified as "primary products" under the Standard International Trade Classification, made up nearly 70% of Vietnam's export earnings. Their share gradually declined, and for several years between the late 1990s and the mid-2000s, the split between primary and manufactured products was relatively even. In the post-WTO period, however, manufactured products have become the more important export category, as foreign investment in Vietnam's manufacturing sector has taken off. The current export structure in terms of primary versus manufactured products is the exact opposite of that of two decades ago (see chart page 6).

Also, we have seen a performance divergence between Vietnam's state-owned enterprises and the private companies that have received foreign investment. Foreign-invested companies have proved to be the most competitive. For example, while foreign-invested firms accounted for only 18% of GDP in 2012, they were responsible for 60% of merchandise export earnings that year.

Vietnam's export explosion

Since 2000, Vietnam's exports have increased tenfold. Total merchandise exports in billions of US dollars (left axis) and merchandise exports as a percentage of GDP (right scale)



Source: IHS

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Vietnam's transformation in context

Vietnam's transformation is part of a broader shift in Asia's manufacturing landscape. The source distribution of foreign direct investment (FDI) inflows into Vietnam suggests that the transformation taking place in the country's manufacturing sector is, to a large extent, driven by a realignment of Asian manufacturing supply chains, particularly in countries such as Japan and South Korea, but also in China, which is facing rising labor costs and increasingly unfavorable demographics. This essentially represents a "second wave" of outsourcing within the region. Given Vietnam's labor force, which is already sizeable at about 53 million—and is set to continue to increase for the next two decades—the country is well positioned from a demographic standpoint to take advantage of Asia's changing manufacturing landscape.

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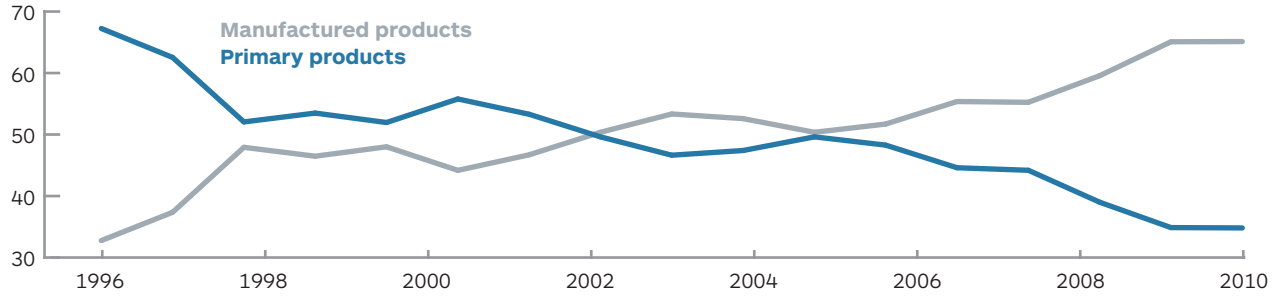
Companies moving into Vietnam are finding that their money goes a lot further than in many other Asian countries, including China. Wages for general workers in Vietnam are substantially lower than those in South Korea, Malaysia, Thailand, and China. The country also enjoys favorable macroeconomic conditions, which have contributed to improved investor confidence. Inflation, at 4.6% in February 2014, is at its lowest rate in more than four years. The country's external balances have stabilized, thanks in large part to

Vietnam's export mix has flipped since 1995

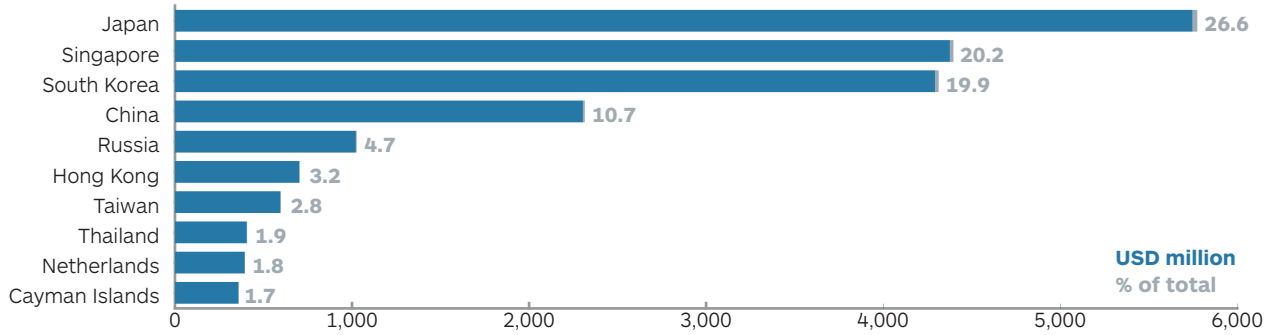
Exports of primary products and manufactured products as percentages of total exports



Source: IHS

Where's the US?

Seven of the top 10 sources of Vietnam's foreign direct investment are Asian. Ranking of foreign direct investment by country for 2013 in millions of US dollars and as a percentage of Vietnam's total foreign direct investment



Source: IHS

the foreign-invested sector, with the trade balance estimated to have been in surplus by almost 6% of GDP in 2013. This is a major change from the country's deficits of more than 14% of GDP in 2007 and 2008.

Improving foreign-exchange reserves have shielded Vietnam's currency, the dong, from recent financial market convulsions that have caused severe currency depreciation in other emerging markets. Collectively, these factors influenced the decision by IHS Economics in January 2014 to place Vietnam's sovereign risk rating on a positive outlook, a move subsequently followed by Fitch Ratings.

Notwithstanding these improved fundamentals, US companies have not invested heavily in Vietnam's manufacturing sector. In 2013, seven of the top 10 sources of foreign direct investment into Vietnam were located in Asia (see chart above). This Asian concentration is not altogether surprising. Heavy participation by South Korea's Samsung, for instance, would explain the sharp growth rate of Vietnam's exports in telephones and spare parts during the past three years (see table on page 8). Similarly, Singapore, Hong Kong, and the Cayman Islands are offshore financial centers that could presumably act as a funnel for investments from other parts of the globe, including the United States.

However, the absence of the United States as a big stand-alone investor in Vietnam is striking, and raises the possibility that US firms are failing to take advantage of a global sourcing strategy involving Vietnam that is being capitalized on by Asian competitors. This is particularly puzzling given that trade between the United States and Vietnam is actually vibrant, having increased sharply since trade relations were normalized in 2001.

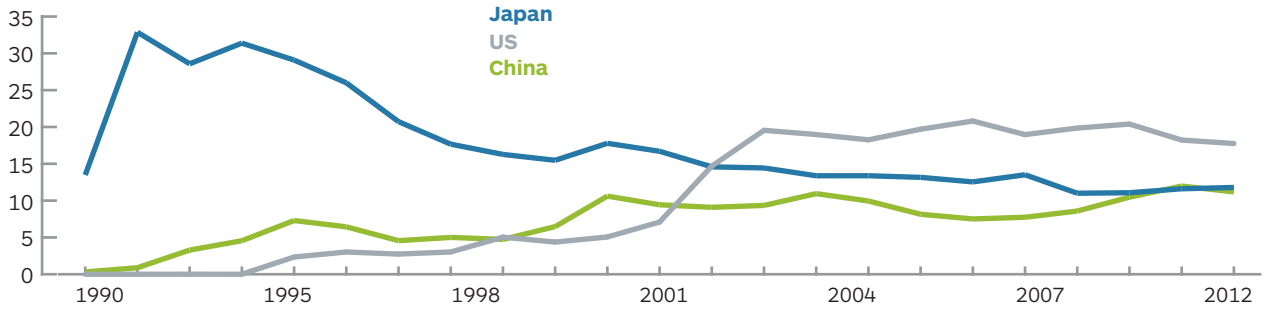
In fact, the United States overtook Japan as Vietnam's single-largest export destination within a year of signing the bilateral trade agreement, and accounted for nearly 18% of its total merchandise exports in 2012. But based on the FDI source structure, it appears that much of that demand from the United States is being supplied with the help of investment from other Asian countries, rather than by US firms operating in Vietnam (see chart page 8).

Challenges to investment

Of course, investing in Vietnam, as in any emerging market, has its challenges. The mere pace of growth in the manufacturing/export sector has posed new challenges for the country's infrastructure and logistics systems, as well as its labor force. As is the case with other fast-growing Asian economies, such as Indonesia, infrastructure upgrades have generally failed to keep up with demand, causing transportation bottlenecks and raising production costs. While marginally better placed than Indonesia in the World Bank's logistics performance index of 2012 (3.0 out of a maximum 5.0 points), Vietnam still lags behind China, Thailand, India, the Philippines, South Korea, and Japan.

Top destinations for Vietnam's exports

The US may not be investing in Vietnam, but it tops the list for Vietnam's exports. The top three destinations for Vietnam's exports as a percentage of total exports



Source: IHS

Growth of higher-value-added industries, such as electronics, and other high-tech sectors also brings new challenges with regard to labor-force skills. While absolute labor supply is relatively plentiful given Vietnam's favorable demographics, the country's labor force requires updated skills to meet the demand of the new growth industries. Inadequate labor skills and infrastructure remain significant challenges for companies seeking to establish or expand manufacturing capabilities in Vietnam.

Despite the relative stability of Vietnam's economy in recent years, its outlook is not without risk. Past experience has shown that Vietnam is prone to boom-bust cycles, with periods of rapid growth typically inducing an inflationary spike that needs to be addressed via monetary tightening, which eventually chokes off growth. (There is, of course, something to be said about learning from past mistakes, and it is not unreasonable to expect that the central bank would be more cautious in managing liquidity conditions during the next boom.) Another risk is the fragile banking sector; a new asset management unit was created in 2013 to begin the process of cleaning up bad loans from the banking system, but there is little information so far as to its effectiveness. Further liberalization of the financial system is necessary to support higher growth in the medium term.

One area of reform that could help unleash productivity gains in the manufacturing sector is the restructuring of state-owned enterprises (SOEs), which currently account for approximately one-third of Vietnam's GDP (see chart page 9). The reform process had essentially

Vietnam's exports are trending toward higher-value products

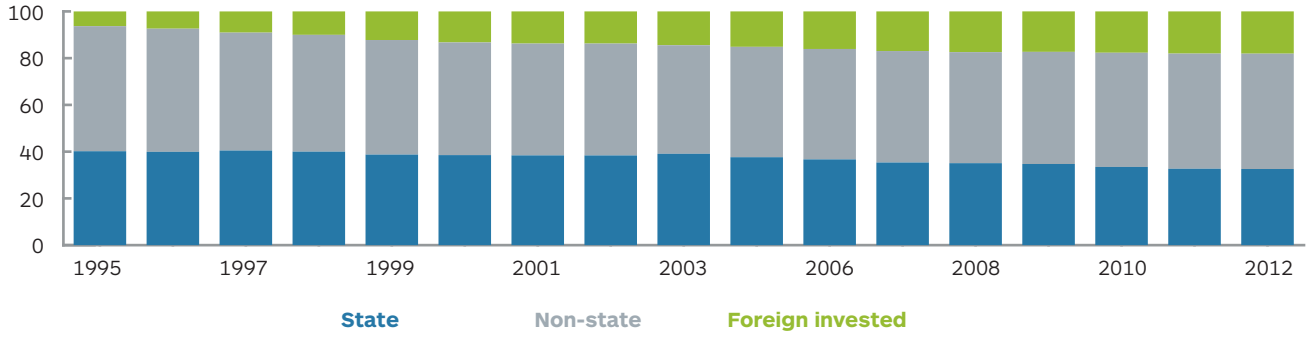
Growth rate of export revenues by product category 2010–13 (US$ billions)

Exports USD billion	2010	2011	2012	2013	% growth rate 2010–13
Telephones, spare parts	2.3	6.9	12.6	21.5	832.5
Textile, garments	11.2	14.0	15.0	17.9	59.5
Electronics, computers	3.6	4.2	7.9	10.7	197.3
Footwear	5.1	6.5	7.2	8.4	63.3
Crude oil	5.0	7.2	8.4	7.2	45.9
Aquatic products	5.0	6.1	6.2	6.7	34.2
Machines, equipment, spare parts	3.1	4.1	5.5	6.0	96.8
Wooden products	3.4	3.9	4.6	5.5	60.0
Vehicles, spare parts	1.6	2.4	4.5	4.9	213.0
Rice	3.2	3.6	3.7	3.0	-8.0

Source: IHS

Vietnam's challenge: Restructure state-owned enterprises

SOEs still account for about a third of Vietnam's GDP. Percent of GDP for state-owned enterprises, non-state domestic companies, and foreign-invested companies. Data not available for 2004.



Source: IHS

stalled after the beginning of the global financial crisis. More recently, though, the government has signaled a re-energizing of the SOE reform process.

In late 2013, Prime Minister Nguyen Tan Dung said that Vietnam would partially privatize, or "equitize," up to 500 SOEs in 2014 and 2015. In January 2014, the Ministry of Finance specifically mentioned Vietnam Airlines, Vietnam Motor Industry (Vinamotor), Waterway Transportation Corporation, Vietnam National Textile and Garment Group (Vinatex), and construction materials company Viglacera Corporation as among the firms to be equitized.

Previously, such pledges have been made, and not always followed by action. The difference this time, however, is that the government is also taking steps to facilitate the equitization process. New regulations are expected to be put in place that will allow shares of SOEs to be sold at below book value—a stumbling block in the past—in order to hasten the process. Given that the macroeconomic environment is much more favorable now than at any time since the global financial crisis, chances are good that the privatization process will meaningfully accelerate in 2014 and 2015. If successful, privatization could attract a new wave of investment.

The outlook

While Vietnam, as an emerging player on the international trade scene, is likely to confront more growing pains, it bears watching as an up-and-coming contender in the global manufacturing arena. On balance, the outlook for FDI in the country is better than it has been in years. In 2013, FDI approvals increased by 55% to $21.6 billion, of which $7.4 billion was capital expansion for existing projects, and $14.3 billion was for entirely new projects.

The extremely high (70.5%) increase in new project FDI in 2013 suggests improved investor sentiment toward the country, and rising confidence that bets made via long-term investments in Vietnam will ultimately prove profitable. Even more encouraging, from an economic growth/productive capacity perspective, is that of the total $21.6 billion in FDI pledges in 2013, 77% targeted the manufacturing and processing industries. Utilities placed second, with 9.4% of the total. Among FDI pledges involving capital increases to existing projects, an overwhelming 89% went into manufacturing and processing industries.

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Emerging markets at the crossroads: Long-term decay or return to growth?

The biggest challenge emerging markets face is the ability to maintain steady, long-term growth. Success will come to those that are able to implement the necessary structural changes.

By Farid Abolfathi

Having enjoyed a multi-decade economic boom with only brief interruptions in most cases, emerging markets (EM) have recently run into significant headwinds. The weakening of EM economies has generated growing concerns among foreign investors, reflected in the poor relative performance of EM equities during the past few years. In comparison, US stocks have sustained an impressive bull market.

To be sure, the global financial markets' recent sell-offs of EM assets also reflect a tactical reallocation of investment portfolios in response to the US Federal Reserve's winding down of quantitative easing, commonly known as "tapering." Other factors that have recently been pulling capital out of EM economies include the European economies' ongoing cyclical recovery, and Japan's more aggressive reflationary policy under Prime Minister Abe. However, many investors have been looking beyond these short-term cyclical adjustments and are becoming concerned about the sustainability of the high growth rates that developing countries have enjoyed for the past 20 years, especially the four BRIC economies: Brazil, Russia, India, and China.

In cases where the EMs' problems are cyclical or temporary, such as in Hong Kong and Singapore, economic growth should resume after appropriate corrective policy measures by the authorities and/or propitious changes in external conditions, such as improvements in terms of trade. But clearly there are long-term structural constraints that have weakened EM growth drivers, eroded their productivity growth, and caused a gradual decay in their long-term growth potential. However, past experience suggests that long-term structural problems are difficult to resolve. Theoretical political-economy models and numerous case studies suggest that dealing with structural economic and political problems usually requires forming a broad-based political coalition for reform and then using it as leverage to overcome the inevitable backlash from powerful, well-entrenched groups that benefit from the status quo. In practice, most pro-reform groups fail to achieve their goals and need extraordinary circumstances to succeed.

Avoiding the middle-income trap

Where pro-reform groups fail or do not emerge at all, the economy is almost certainly condemned to weak economic growth and/or instability and periodic financial turmoil, such as in many Latin American, African, and Middle Eastern countries. In cases where an economy has enjoyed the first

Dharavi, a 240-hectare shanty town in the heart of Mumbai, India, one of the world's most populous cities. A decade-old redevelopment plan calls for new housing, schools, parks and roads but has stalled amid India's financial crisis and local protests.

South American economic reforms historically have been insufficient to sustain long-term expansion

Obstacles to enduring regional growth

Problem	Consequences
Populist economic policies	Interventionist policies, weak public finances and capital flight
Excessive red tape and costly licenses	Expansion of informal economy and weak tax collection
Unrealistic minimum wage laws	High unemployment among the most disadvantaged segment of the population
Politicized labor movements	Rigid labor markets, frequent strikes, and capital flight
Narrow tax base	Over-dependence on fees and taxes harmful to businesses
Import substitution policies	Weak international competitiveness and capital flight
Dependence on natural resource exports	Price volatility and boom-bust economic performance
Poor infrastructure	High business costs and regional economic inequality
Low household savings	Dependence on external savings and frequent debt crises
State-directed credit allocation	Misallocation of capital and periodic banking crises
Over-regulation of utilities	Supply bottlenecks and discouragement of private investment
State control of natural resources	Under-utilization of natural resource endowments
Misallocation of educational resources	Supply-demand mismatch for skilled workers
Emigration of skilled talent ("brain drain")	Loss of economic dynamism and weak economic growth
Inefficient legal institutions	Weak contract enforcement
High corruption	Discouragement of foreign investment from Western countries
High crime and violence rates	High business costs and low foreign capital investment
Political instability	Capital flight and "brain drain"
High population growth	Expansion of urban ghettos and pressure on services

Source: IHS

Structural reforms have a better chance of succeeding when a country has suffered from a major economic crisis, especially a prolonged one

stages of economic development and established a low-value-added manufacturing base, the failure to carry out additional reforms can mire the economy in what is sometimes called the "middle-income trap," which describes situations in which an emerging economy stops converging with more advanced economies. More precisely, the middle-income trap is the failure to carry out reforms needed to help the transition to higher-value production after the country's lower-value-added sectors start losing market share to countries with cheaper labor costs.

Structural reforms have a better chance of succeeding when a country has suffered from a major economic crisis, especially a prolonged one. In such circumstances the solidarity of vested interests can crack and the beleaguered population becomes more motivated to support a reform coalition. To put it in other terms, after suffering badly in a severe crisis, people become fed up with the status quo and are more willing to take the risk of trying a new approach to their common problems. Hence, they are more likely to give new leaders the opportunity to achieve structural changes.

A good example is provided by Argentina during the presidency of Carlos Menem, who came to power in 1991 at a time when the country was mired in a relentless economic crisis. President Menem was an astute and nimble politician who was able to patch together a reform coalition and use it as a leverage to implement major fiscal and structural reforms in a remarkably short time. He was greatly aided by the divisions that had recently emerged within Argentina's normally powerful anti-reform interest groups—thanks, to a large extent, to strains created by the country's endless economic crises. Menem's reforms included stabilization of the local currency by means of a currency board and the privatization of a wide variety of state-owned enterprises, including the post office, petroleum company YPF, and utilities for water, electricity, telephone, and gas.

In the wake of these reforms, Argentina's financial system stabilized rapidly, GDP growth picked up, and there was a large influx of foreign investment that further boosted the economy, sustaining a seven-year boom. Unfortunately the good times came to an abrupt end with another severe economic crisis in early 2002, caused by imprudent economic policies during the late 1990s and early 2000s. The missing ingredient in Argentina's reforms in the 1990s was the failure to

continue the reforms. If Argentina had maintained the momentum of its reforms by deepening them with additional measures, the earlier gains could have been consolidated. The reform process needs to be a continuous process that goes on, even when an EM economy converges with advanced ones.

Like Argentina, many other South American countries have, from time to time, carried out economic reforms, usually after a prolonged and/or severe crisis—often involving record-breaking hyper-inflation and/or prolonged growth stagnation. In most cases, the reforms have not been sufficiently deep to sustain steady, long-term economic expansion. As a result, the region's major economies face numerous obstacles that make them vulnerable to external shocks and have a tendency to develop imbalances that accumulate over time.

When it comes to economic reform, the EM countries that have achieved the greatest progress are all either in central Europe (such as Poland, the Czech Republic, Slovakia, and Estonia) or the Far East (including Hong Kong, Taiwan, South Korea, Singapore, Malaysia, China, Thailand, Indonesia, and the Philippines). The OECD and World Bank have appropriately labeled these Asian reformers "dynamic Asian economies," with the first four on the list considered to be the most advanced reformers. These countries have established world-leading business climates and have been at the forefront of Asia's economic reform movement during the past 60 years. Furthermore, some of them have already achieved advanced-economy status by most measures. For example, South Korea's per-capita GDP is roughly the same as those of Italy and Spain (at purchasing power parity rate). Nevertheless, these economies still have room for implementing further growth-enhancing reforms (see table at the top of page 14).

"Dynamic Asian economies" offer the best business climates among emerging markets

Rankings based on ease of doing business, 2006 and 2014

Country	2006	2014	Net change
Singapore	1	1	0
Hong Kong	4	2	2
Malaysia	17	6	11
South Korea	20	7	13
Taiwan	44	16	28
Thailand	23	18	5
Chile	29	34	-5
Peru	55	42	13
Colombia	63	43	20
Mexico	58	53	5
Panama	57	55	2
Mongolia	52	76	-24
China	89	86	3
Vietnam	75	99	-24
Philippines	113	108	5
Pakistan	61	110	-49
Brazil	99	116	-17
Indonesia	114	120	-6
Argentina	85	126	-41
Bangladesh	82	130	-48
India	116	134	-18
Bolivia	118	162	-46
Haiti	131	177	-46
Venezuela	130	181	-51

Source: World Bank

Economic booms and busts

Before the Industrial Revolution, the high economic growth rates associated with boom times were infrequent because of political turmoil, wars, and economic and financial "repression." The repression included high taxes, trade restrictions, and limited availability of credit as a result of religious prohibition of interest. The discovery and conquest of new lands—in the case of the

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Asia's top emerging markets still have economic hurdles to overcome

Remaining obstacles to improved industrial performance

Problem	Consequences
Service sector market rigidity	Lack of competitiveness and weak sectoral growth
Aging population	Declining labor-force participation
Over-reliance on exports	Vulnerability to external demand
Excessive household savings	Export dependence and misallocation of resources
Government-directed credit allocation	Misallocation of capital
Over-regulation of utilities	Discouragement of private investment
Over-restrictive immigration policy	Wage inflation and loss of competitiveness

Source: IHS

Americas and Australia—did generate economic booms for some of the European conquerors, but the benefits did not last long. Growth surges that result from such windfalls usually create economic imbalances that end badly. The legacy of such booms often consists of long periods of financial turmoil and economic stagnation. It was the Industrial Revolution that made economic booms more sustainable by fostering rapid urbanization and capital accumulation. The economic booms during most of the Industrial Revolution were relatively tame, though, compared with those following the Second World War (see table on page 15).

The early post-Second World War economic booms were nearly all driven by high investment spending to rebuild war-damaged infrastructure and industries. But as the post-war reconstruction approached completion during the 1950s, the powerful impetus from investment spending eased and overall economic growth decelerated in most previously war-damaged countries. In the case of Western European countries, the growth decay was inevitable because of their rapid convergence with the US economy—the only advanced economy that was both at the frontier of technology and had suffered little infrastructure damage during the war.

Taiwan: Evolution of a successful economic development strategy

Taiwan provides a good example of the successful phases of a long-lasting, super-charged economic expansion. It also represents a useful case study of how the country's progressive development policies and reforms helped to sustain the vigor of its expansion decade after decade until the economy approached convergence about 10 years ago:

- **Phase 1, 1940s:** Economic development during this period involved post-Second World War reconstruction and absorption of large numbers of Chinese from the mainland who came to Taiwan to escape war and Communist rule. This phase was aided by resource transfer brought by the refugees, as well as generous amounts of US foreign aid.
- **Phase 2, 1950s:** Growth was driven by import substitution focusing on light industries using relatively simple technology (for example, textiles and food processing), limited privatization of some state enterprises, and US-supported land reform.
- **Phase 3, 1960s:** Involved establishment of Export Processing Zones and the launch of Taiwan's incredibly successful export-led development strategy.
- **Phase 4, 1970s:** Included public financing of mega-construction projects to improve infrastructure, establishment of science and technology hubs to support industrial development, and state fostering of capital-intensive basic industries, such as iron and steel, machinery and automobile manufacturing, and

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The subsequent super-charged economic expansions, like those of China, South Korea, and Taiwan, represent a rather modern phenomenon—made possible via the establishment of a new post-war international system of agreements fostering economic globalization and cross-border technology

Economic booms following the Second World War were all primarily driven by investment

Extent and duration of post-war surges in Europe and Asia

Country	Average GDP growth (% y/y)	Duration	Reasons for the decline in growth
Germany	10.3	13 years: 1947-60	Gradual slowdown in post-Second World War reconstruction
Austria	10.1	11 years: 1946-57	Gradual slowdown in post-Second World War reconstruction
France	14.8	6 years: 1945-51	Political instability at home and the Indochina War
Netherlands	13.5	10 years: 1946-56	Gradual slowdown in post-Second World War reconstruction
Soviet Union	7.9	9 years: 1947-56	Gradual slowdown in post-Second World War reconstruction
Hungary	9.0	9 years: 1946-55	The Hungarian anti-Communist uprising
Romania	10.7	8 years: 1947-55	Gradual slowdown in post-Second World War reconstruction
Bulgaria	8.2	9 years: 1946-55	Gradual slowdown in post-Second World War reconstruction
Japan	9.3	27 years: 1946-73	The First Global Oil Crisis
China	8.0	9 years: 1949-58	The fiasco caused by Mao's Great Leap Forward
Taiwan	10.7	34 years: 1946-80	The Second Global Oil Crisis
South Korea	7.8	4 years: 1946-50	The Korean War
South Korea	8.6	6 years: 1952-58	The end of post-Korean War reconstruction boom

Source: IHS

petrochemicals, as well as continued encouragement of light manufacturing (for example, textiles, shoes, food processing, and umbrella production).

- **Phase 5, 1980s:** State fostering of private-sector industries focusing on more advanced and higher-value-added technologies, such as electronics.

- **Phase 6, 1990s–present:** During this period, Taiwan's economy and businesses have matured and its high-tech manufacturing leads the world, thanks to lavish investment in research and development, design innovation, and brand development.

With a per-capita GDP that now equals those of Italy and Spain at purchasing power parity exchange rate, Taiwan's economy has effectively converged with those of advanced economies and can no longer generate the super-charged expansion of earlier decades. To be sure, the country can still implement growth-enhancing policies by better aiding technical training of youths, fostering advanced research and development, boosting competitiveness of the service sector, and further loosening its restrictions on economic ties with China. But the potential boost from implementing such policies will be marginal. Having already dramatically closed its economy's distance to the technological frontier, Taiwan, like South Korea and Singapore, has converged with most advanced economies and cannot boost its growth significantly. We expect its potential growth to drop to 2–3% annually during the course of the next few decades, provided it continues to follow prudent macroeconomic policies and carries out the remaining growth-enhancing measures, such as those listed above.

Farid Abolfathi

transfers. Post-war technology transfer has played a key role in the rapid expansion of industries in Japan, Taiwan, South Korea, and many others—including those in China since the opening of its economy to the outside world. But the primary impetus for the vigor and sustainability of emerging economies' expansions has come from deepening economic reforms, which have progressively enhanced the flexibility, efficiency, and competitiveness of the economies (see table on page 17).

Ultimately, any economy with a super-charged expansion rate is bound to eventually experience progressive decay in its pace as its population becomes more affluent and its GDP growth approaches convergence with those of advanced economies. The underlying reason for this is the convergence of the economy's technological base and management techniques with those of the advanced economies that are at the frontiers of knowledge. Such convergence has been relatively rare, however, and since the Second World War has occurred only in Europe and a handful of Asian economies. The reason for its rarity is that most EM countries have failed to advance their economic reform agendas very far, and either fall into the middle-income trap or never progress beyond the initial import substitution stage. Import substitution and fostering of "infant industries" were popularized by the late Argentine economist Raúl Prebisch.

South Korea: History of a super-charged economic boom

The 60-year history of South Korea's dizzyingly rapid climb from a war-ravaged, poverty-stricken economy to an affluent, advanced economy provides an excellent case study of how a country can quickly develop its economy through judicious use of limited resources and prudent economic policies.

Like Japan and Taiwan, South Korea's natural resources endowment is relatively poor. The country did receive a substantial boost from US foreign aid and military spending during its early economic development in the 1950s, 1960s, and 1970s, but the heavy lifting that has catapulted the country to the status of an industrial giant since then has been driven by the government's nimble macroeconomic management, structural reforms, and development of effective domestic institutions.

To be sure, key ingredients of South Korea's success have been its people's discipline and industriousness, and the business sector's dynamism. South Koreans built up their manufacturing during the early post-war decades by focusing on "imitation"—i.e., adopting available foreign technologies and using them highly efficiently. But the country's progressive shift from light manufacturing to ever higher-value-added products has increasingly involved "innovation" (i.e., development of new technology) and best-of-class product design. This transition has been made possible by a remarkably effective educational system

To be sure, in the early stages of an economy's take-off path, it could certainly receive a major initial boost from import substitution and protection of its infant industries, which are protected behind trade barriers. But such a growth strategy has limited durability and is never viable in the long term. Within a decade, the economic expansion runs out of steam and growth stagnates. The manufacturing sectors of some South American countries, such as Argentina and Brazil, have remained uncompetitive since the 1950s because their economic policies have not evolved significantly beyond the import substitution/infant industry model.

The sustainability of a super-charged expansion requires structural reforms to foster economic efficiency and international competitiveness. This means that sooner or later trade barriers have to be brought down and domestic businesses must become more efficient and learn to compete internationally to survive. The removal of barriers to competition does not need to be carried out all at once—it can happen selectively and gradually—but it has to be progressive and thorough to achieve full convergence with advanced economies.

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To view Farid's bio, visit http://bit.ly/abolfathi

Trade and technology transfer have fueled "super-charged" economic expansions

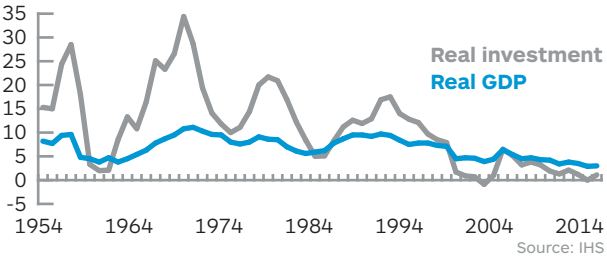
Extent and duration of the most enduring booms of the post-war period

Country	Average GDP growth (% y/y)	Duration	Reasons for growth decay
Japan	8.3	33 years: 1946–1979	Failure to continue economic reforms
Hong Kong	11.0	39 years: 1945–1984	Convergence with advanced economies
Taiwan	8.7	61 years: 1946–2007	Convergence with advanced economies
South Korea	7.7	50 years: 1946–1996	Convergence with advanced economies
Singapore	9.0	54 years: 1946–2000	Convergence with advanced economies
China	9.1	43 years: 1969–2012	Limited growth decay from delays in reforms
Thailand	7.4	47 years: 1949–1996	Asia Crisis; growth likely to weaken further due to recent political crisis
Indonesia	7.3	28 years: 1968–1996	Asia Crisis; post-crisis growth constrained by messy politics
Malaysia	7.1	38 years: 1959–1997	Asia Crisis; post-crisis growth constrained by lack of deeper reforms
India	7.1	16 years: 1994–2010	Delayed reforms, protectionism, corruption, and poor policy co-ordination

Source: IHS

Second-generation economic reforms are required for South Korea to boost growth

Real GDP and investment have been decelerating since the 1970s. Five-year moving average of annual growth (% y/y)



Source: IHS

that produces some of the world's best engineers, scientists, and managers, and provides ample supplies of less-skilled workers for both the business and government sectors as well.

However, as in the case of Taiwan, super-charged economic growth cannot go on forever. The chart at left illustrates how rapid growth has decayed in South Korea as its economy has converged with more advanced ones. There is still room for South Korea to boost its economic growth through structural reforms, but the days of double-digit expansion are over. To avoid stagnation, South Korea needs to carry out "second generation" economic reforms, including measures to reduce households' precautionary savings to strengthen domestic demand and cut export dependency; provide better access to vocational training and day care; institute market-based pricing for utilities; and eliminate service market rigidities to make the sector more competitive and attractive to investors.

Farid Abolfathi

Technology transformation, economic growth, and the implications for employment

It remains to be seen if US GDP growth will return to pre-Great Recession levels. At the heart of the challenge is the role that technology will play in boosting productivity and the long-term impact it will have on job growth.

By Doug Handler

Between 1980 and 2007, real GDP growth in the United States averaged 3.2% annually. Over the past four years, since the end of the Great Recession, growth has averaged just 2.3% (see chart below). This gap is especially notable in that it includes the most recent post-recession period, when above-average growth would have been expected from a cyclical rebound.

The lack of a rebound begs the question: Can the US economy ever achieve 3%-plus real GDP growth again on a sustainable basis? The answer: probably, but it won't be easy.

Economic growth is derived from three sources: adding labor, either more people or more man-hours per person; adding capital, either more or higher-quality machinery; and, thirdly, finding innovative ways of using labor and capital together. This last item is called "multi-factor productivity," or MFP. (For the purpose of this article, capital is considered as both physical capital and intellectual capital, that is, both tangible and intangible assets.)

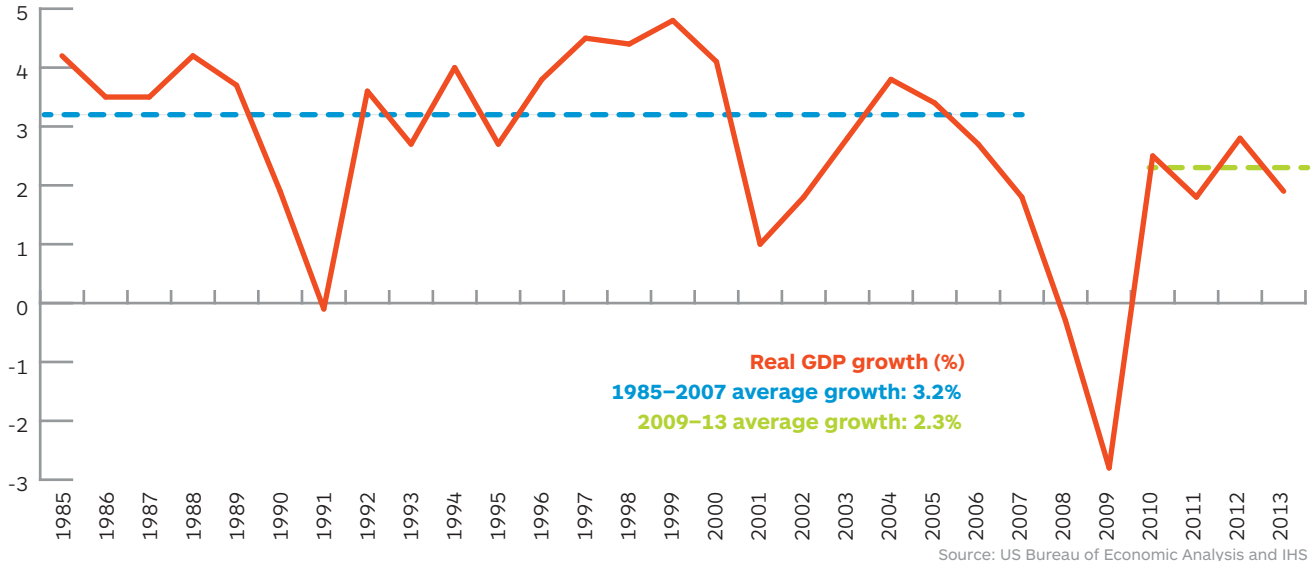
MFP is all about innovation and business process transformation and is tightly linked to the adoption of new technology. The formula for MFP-led growth is well known: better education and management skills and the use of technological tools; more research and development investment; and being more creative about how existing products and services are combined to drive multi-factor productivity growth (see chart at the top of page 19).

The arithmetic behind growth

Business cycle issues aside, growth in total man-hours is effectively capped by an aging labor force. In the IHS forecast, total hours in a full-employment economy (with an unemployment rate near 5%) will grow at only 0.3% per year. According to the Organization for Economic Co-operation and Development (OECD), returns on capital averaged 0.8% per annum between 1985 and 2011 and were stable during this period. Returns peaked at 1.4% in 1999 near the end of the

Has US growth permanently downshifted?

The Great Recession struck a blow, but is it permanent?



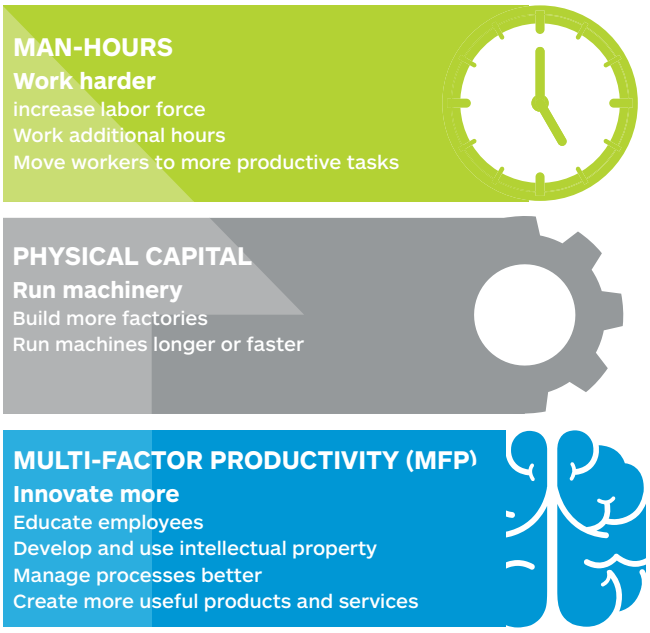
Source: US Bureau of Economic Analysis and IHS

dot-com boom and averaged just 0.3% in 2009, 2010, and 2011, the last years for which data were available. Adding together the 0.3% growth in hours and the 0.8% return on capital (assuming it will match its long-term average) gives 1.1%. This means that MFP must grow 1.9% annually for the 3% real GDP growth threshold to be reached.

Is this possible? The figure below shows the challenge for MFP. Since 1988, MFP growth has surpassed 1.9% occasionally, including a three-year period in the early 2000s when internet and broadband connectivity were adopted pervasively. Direct cause and effect are difficult to establish empirically, but the advent of these technologies and the supporting process changes that occurred surely were key drivers of MFP growth.

Complicating the analysis, the three factors of production—labor, capital, and MFP—are not independent of each other. In most OECD countries, labor's share of factor inputs is generally 70–80%; thus many, if not the vast majority of, investment projects threaten jobs by substituting capital for labor. With such projects, output per man-hour might increase, but at the expense of reducing the number of man-hours. Similarly, a country might be able to increase its productivity through improved use of technology, but the full extent of these gains may not make it through

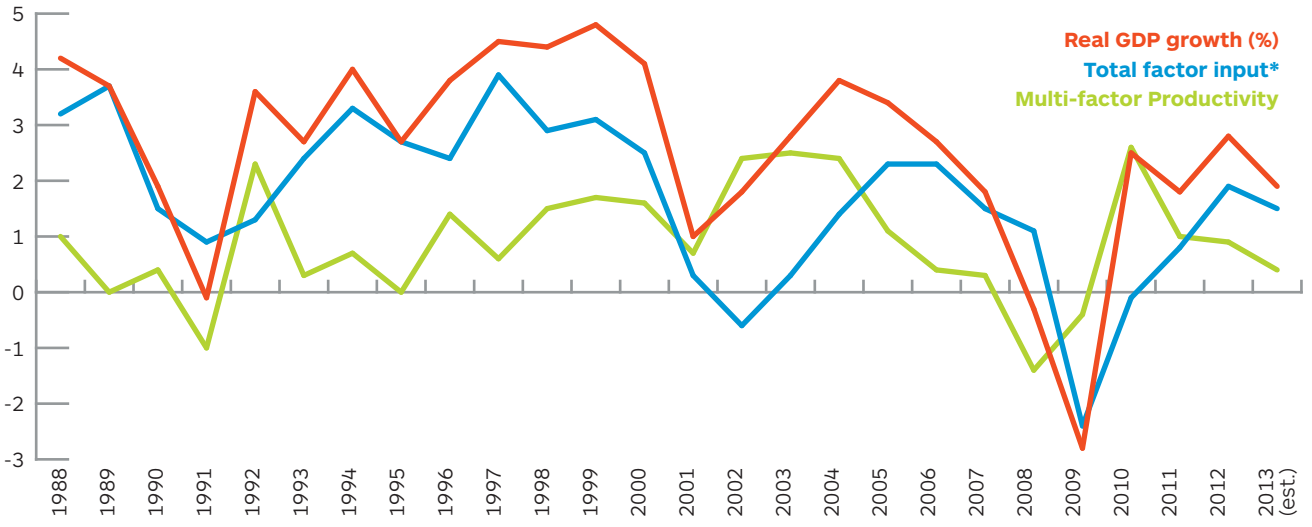
There are only three ways real GDP can grow



Source: IHS

A rebound in multi-factor productivity is needed to boost GDP growth to about 3%

Real GDP growth equals total factor input growth, plus MFP growth



*Sum of labor and capital inputs

Source: US Bureau of Economic Analysis and IHS

to GDP growth because of an unduly large offsetting cut in man-hours worked.

Exploring this conundrum at the microeconomic level, firms invest either to reduce costs, or capture new markets and retain existing ones. In the United States, the Bureau of Labor Statistics (BLS) occupational employment data suggest there are throngs of people working in occupations in which their value has changed little in recent years. As the United States becomes a more information-intensive society, companies are continually seeking ways to automate tasks that replicate labor-intensive information processes or use the same information repeatedly. This describes millions of jobs across the country.

Technology displacing jobholders

The sheer magnitude of the number of people working in occupations that can be supplanted by technology is daunting. This implies that the use of technology has yet to fully penetrate the business sector—and may explain why MFP growth is not as rapid as it has been in the past—and that the trend of technology-driven cost-cutting has a long way go.

The table below shows employment levels for 15 occupations selected from the BLS occupational database to illustrate the potential for substitution of labor with capital. The list is not comprehensive, as many additional occupations exist in which this substitution will soon be a factor. It also does not imply that these selected occupations will cease to exist, such as the video-rental store clerk. The table merely illustrates the breadth of jobs in existence today in which the day-to-day process will be vastly transformed by technology, reducing the economy's total employment requirements in these areas. For most of these occupations, this displacement is already well under way.

On page 21 is another figure, which provides more detail on one of the categories in the chart below: travel agents. This figure shows that in 2000, there were 124,000 travel agents who had efficient access to all airline databases. By 2012, only 65,000 travel agents remained, with consumers increasingly able and willing to book their own tickets. To be sure, there are economic benefits to booking one's own travel, in the form of lower ticket prices and reduced transaction costs, which bolster multi-factor productivity. But the 59,000 fewer travel agents will be quick to point out their income losses.

15 professions that software engineers are gunning for

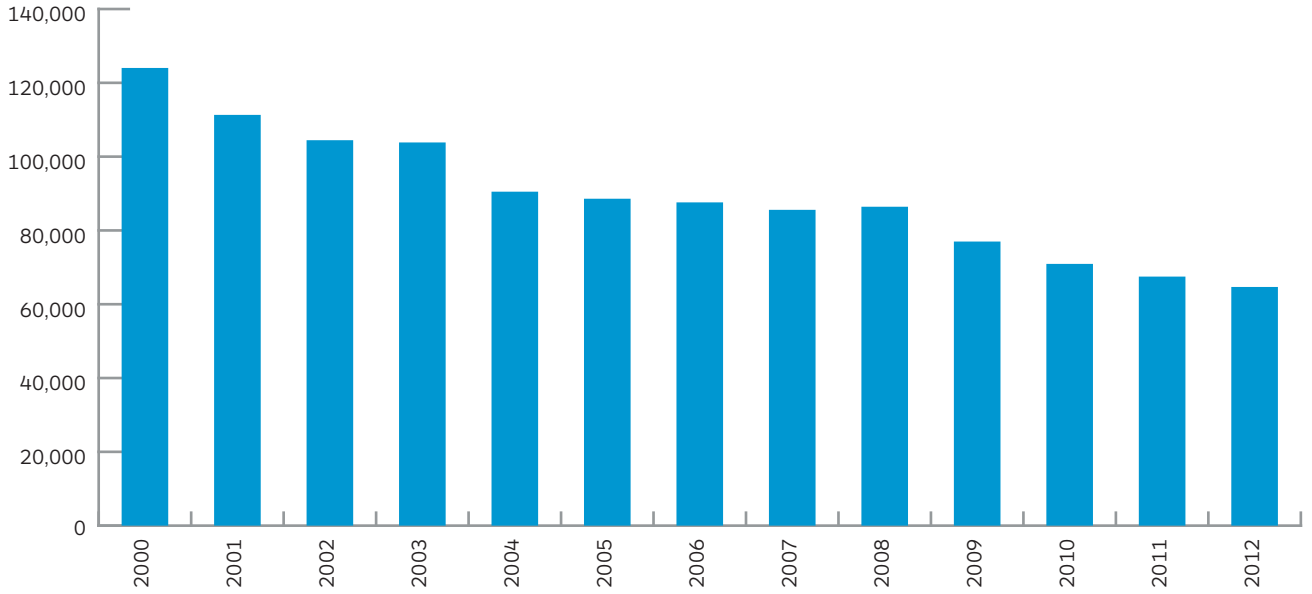
Total employment in 2009 and 2012 for a selection of professions, and the percentage change during the three-year period.

Occupation	2009 Employment	2012 Employment	% Change
Secretaries and administrative assistants	3,872,960	3,615,090	-6.7
Cashiers	3,439,380	3,314,010	-3.6
Financial clerks, other than tellers	2,939,780	2,783,010	-5.3
Security guards	1,028,830	1,046,420	1.7
Tellers	576,580	541,770	-6.0
Insurance sales agents	325,710	336,740	3.4
Hotel, motel, and resort desk clerks	224,360	229,000	2.1
Medical records and health information technicians	170,580	182,370	6.9
Switchboard and telephone operators	168,940	136,200	-19.4
Reservation and transportation ticket agents and travel clerks	142,500	135,930	-4.6
Travel agents	76,990	64,680	-16.0
Meter readers, utilities	42,330	39,530	-6.6
Umpires, referees, and other sports officials	14,860	15,570	4.8
Motion-picture projectionists	10,310	8,030	-22.1
Door-to-door sales workers, news and street vendors	8,460	6,650	-21.4

Source: US Bureau of Labor Statistics and IHS

No need to apply

The number of travel agents in the United States has declined by almost 50% since 2000



Source: US Bureau of Labor Statistics and IHS

While the travel agent profession has largely adjusted to the emergence of technology, this transformation has just started or will start soon for other occupations. For instance, banks are aggressively adding technology to reduce the time required for each transaction through either better automation or video-driven call centers that maximize tellers' utilization. If the transaction capacity for each teller eventually increases by 25% because of these faster transactions —a plausible investment goal stated in many business plans—it does not require a complex economic model to forecast a decline in bank teller employment in the coming years. This will surely affect some portion of the nation's more than a half-million bank tellers.

Likewise, there are more than one million security guards in the United States, many of whom could be replaced by automated video systems. A further 136,000 switchboards and telephone operators' jobs could be automated by computer switching systems, and so on. One can even imagine that some of the nearly 16,000 professional sports officials could be replaced by video analysis—baseball managers would have to learn how to argue with video producers rather than umpires.

Will these developments help boost the MFP rate past the 1.9% threshold? It is entirely likely. Looking at just 15 occupations, more than 12 million jobs can be significantly transformed with the adoption of new technology. That represents 9% of all employment, and there are arguments for technology displacement occurring in much of the remaining 91% as well.

Adapting to new business paradigms

It is often said that training in the "STEM" disciplines—science, technology, engineering, and mathematics—is critical to finding and retaining a good job. That is stating the obvious, but not enough employers understand how to adapt new technologies to their current business situations and train workers for the future. The employment levels of the occupations listed in the figure containing BLS data will not drop to zero, but those who survive will be the ones who know how to work best with emerging technologies. They will be the drivers of multi-factor productivity. They might not be an engineer, but they will have to think like one to add value and apply technology to solve their company's inherent business challenges.

The good news is that many of the technologies

responsible for displacing jobs can also be used as training tools for the people in the positions that replace them. Online higher education courses, video and interactive blackboards, and simpler analytical tools all will help facilitate this transition. Ten years ago in the economics profession, a "marketing mix modeler" who analyzed the effectiveness of advertising and promotional campaigns earned well into six figures and required a PhD in econometrics or statistics. Now, these skill sets are taught at the undergraduate level. The data analysis tools are much more powerful and simpler to use than a decade ago. A data scientist can fulfill the role of a marketing mix modeler at about half the salary. The data scientist must know where to click, as the tools replicate the logic of the econometrician. The data scientist's key intellectual asset will involve understanding the basic business problem at hand and how the results support his or her company's business decisions. However, for this transformation to even begin, prospective employees must be made aware of what a data scientist does and what is required to be successful in that role.

The time it takes for these occupational transformations to occur will vary. For occupations such as travel agents, most of the change is likely to have already occurred, while for others, including bank tellers, it is just starting. In the case of truck drivers, the acceptance of driverless vehicle technologies may not begin for about a decade, as safety and regulatory issues need to be addressed beforehand.

The rapid adoption of internet-based technologies and broadband in the first half of the previous decade was a major driver of MFP growth above the 1.9% threshold from 2002 to 2004. While the continuing uptake of these technologies will help sustain MFP growth, thus far the resulting employment transformations have been insufficient to restore MFP growth to its levels of 10 years ago. However, an accelerator is on the horizon: "the cloud."

The cloud: Driving transformational change

"Cloud computing" is a generic term that refers to IT services performed remotely (i.e., not native to a company's internal data center) and delivered over the internet. These services are generally delivered "on demand" with pay-as-you-go pricing and can involve functions such as running or managing specific software applications, storage or security services, or providing IT infrastructure or web-hosting assets. Using cloud services, firms can effectively buy an IT capability with minimal adjustment to their existing IT infrastructure—a sort of plug-and-play structure for data center tasks. There are comparatively few costs incurred in implementing cloud services other than the one-time write-off of some existing assets. IHS Technology predicts that by 2017, global enterprise spending on cloud computing will exceed $235 billion worldwide, triple the $78 billion spent in 2011.

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The growth in cloud computing is being fueled by the many advantages it confers over conventional IT structures. The cloud reduces IT expenditures by allowing firms to buy only the IT capability they need, when they need it. The cloud improves IT efficiency by putting the onus on the cloud services vendor to maintain state-of-the-art technology for its customers to use. And they advance business agility by providing IT support for new business ventures in hours or days rather than months or years.

However, these efficiencies are secondary to the biggest benefit of cloud computing: the reduction of risk. Two major hindrances to companies adopting new technologies are a lack of technological savvy as to how a new IT tool can be utilized, and a lack of faith that a new technology will work effectively, if at all. Corporate history is rife with anecdotes about huge failed or inefficient IT projects. Just last year, the design and implementation of the federal government's website for its health insurance program became a case study for how a huge IT implementation can go wrong.

As companies increasingly adopt technology to support market development activities, job creation will ensue, supported by new job tools and new ways to receive training using these tools

Do-it-yourself (in-house) transformations typically involve large capital expenditures and, as such, carry significant risk. Companies incorporate an assessment of this risk into their ROI calculation for the investment, much like assessing the risk of doing business in a country with an unstable political climate. The higher the risk, the lower the project ROI and the less likely that project is to be adopted.

Cloud computing, on the other hand, avoids this project risk: If a cloud service does not work as promised, a company can simply pull the plug and rent the services of a competitor. With the cloud, the risk premium is almost thoroughly abated, raising ROI and helping drive the adoption of cutting-edge technologies to firms that are risk-averse or lack IT expertise.

As an example for security firms, cloud-based intelligent video surveillance systems may replace security guards. Today, there are more than one million security guards employed in the United States. Given that these systems are complex to operate and require different IT resources than most other applications, it is easy to see how a company would be hesitant to install such a system, particularly a small- or medium-sized firm. However, using a cloud-based service would involve only the physical installation of cameras (a one-time cost), robust internet connectivity, and a method by which the cloud system could report back any unusual activity.

While business transformations such as these are already helping firms gain a competitive edge in the marketplace, they still have to grow their business the old-fashioned way by identifying new markets, targeting new customers, and making new products that come to market faster. What remains to be seen is whether companies will develop the truly effective methods for harnessing technology in the service of higher productivity and economic value—while avoiding disproportionate reductions in employment levels—for the US to rebound to pre-recession growth levels.

We believe this can happen. The good news is that corporate cost-cutting is a finite process—costs can only be trimmed by so much. As companies increasingly adopt technology to support market development activities, job creation will ensue, supported by new job tools and new ways to receive training using these tools. Then, at last, we can achieve the maximum possible multi-factor productivity gains without the man-hours offset. This is what 3%-plus economic growth will look like.

Doug Handler is chief US economist, IHS Economics.

To view Doug's bio, visit http://bit.ly/dhandler

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